

## General Force Problem Types:

For one object:

- 1-D equilibrium:
  - Object at rest or at constant velocity in y-direction [elevator problems]
  - Object moving at constant velocity in x-direction (given force of friction) [tug of war problems]
- 1-D non-equilibrium:
  - Object accelerating in y-direction [elevator problems]
  - Object accelerating in x-direction (given force of friction) [tug of war problems]
- 2-D equilibrium:
  - Object hanging on string between two supports
  - Object at rest on horizontal surface with friction (given or calculate coefficient of static friction) [basic push problems]
  - Object moving at constant velocity on horizontal surface with friction (given or calculate coefficient of kinetic friction) [basic push problems]
  - Object on flat surface with applied force at an angle, either at rest or in constant velocity [basic push problems]
  - Object on an incline with friction at rest or moving at a constant velocity
- 2-D non-equilibrium:
  - Object accelerating on a horizontal surface with friction [basic push problems]
  - Object with applied force at an angle, accelerating
  - Object on an incline accelerating up or down the incline

Two objects:

- 1-D non-equilibrium:
  - Objects attached by a string accelerating in y-direction
  - Objects attached by a string accelerating in x-direction
  - Both objects hanging, attached by a string passing over a pulley [pulley II problems]
- 2-D equilibrium:
  - One object on horizontal surface attached to other (hanging) object by means of a string passed over a pulley; both at rest [pulley I problems]
  - Objects attached by a string; both objects on an incline with friction
  - Objects attached by a string; both objects on a horizontal surface with friction
- 2-D non-equilibrium:
  - One object on horizontal surface attached to other (hanging) object by means of a string passed over a pulley; both accelerating [pulley I problems]
  - Objects attached by a string; both objects on an incline with friction
  - Objects attached by a string; both objects on a horizontal surface with friction